CLAIMS

1) A method of estimating the volume ratio of gas to oil (GOR) in the fluids of a well during drilling, characterized in that it comprises :

• determining the volume of gas (Vg) contained in the drilling fluids by measuring a

5   ratio between a volume of gas produced and a corresponding volume of drilled rock,

• determining the volume of oil (Vo) by measuring the total organic carbon (TOC) in the drilled rock while taking account of physical characteristics of the drilled rock and of the oil under the surface conditions, and

• determining said volume ratio (GOR) by calculating the ratio of the previously

10   determined volumes of gas and of oil.

2) A method as claimed in claim 1, characterized in that the ratio of a volume of gas produced at the surface to the same volume of drilled rock is evaluated by taking into account the gas concentration of the drilling fluids, the flow of circulating drilling fluids, a rate of penetration of the drill bit and the diameter of the borehole.

15   3) A method as claimed in claim 1, characterized in that said volume ratio (GOR) is determined by the relation :

$$GOR = \frac{SPI}{\dfrac{TOC}{100}.k.\dfrac{\rho_r}{\rho_o}}$$

where :

ρ_o is the density of the liquid hydrocarbon at the surface (generally estimated at 0.8),

20   ρ_r is the estimated rock density, ϕ is the porosity of the rock and k is the ratio between % by weight of oil and of carbon in the drilled rock.